



**LOUDOUN COUNTY, VA  
TECHNICAL REVIEW**

**PROPOSED  
NEW  
(2) 100-foot MONOPOLES  
by  
COMMUNITY WIRELESS STRUCTURES  
(CWS)**

**CWS Site # 106 Wheatland  
CMPT 2007-0006  
SPEX 2007-0013**

**Submitted by:**

**ATLANTIC TECHNOLOGY CONSULTANTS, INC.**  
A Member of The Atlantic Group of Companies

**ATC PROJECT #: 1025-13**

**November 2, 2007**



THE ATLANTIC GROUP  
OF COMPANIES INC.

## **EXECUTIVE SUMMARY:**

Community Wireless Structures (“CWS”) of Falls Church, Virginia, has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct two (2) 100-foot monopoles on property owned by Hyun and Young Hee Kim located in the southeast quadrant of the intersection of Charles Town Pike (Route 9) and Berlin Turnpike (Route 287) at 38295 Charles Town Pike, Waterford, VA.

CWS is a tower developer for wireless infrastructure and offers co-location opportunities for eligible wireless carriers such as cellular, PCS, paging, and backhaul providers. CWS has submitted a letter of interest from Verizon Wireless (“VZW”), Sprint-Nextel, Fibertower Corporation (“Fibertower”), and Mobile Satellite Ventures (“MSV”). Verizon Wireless and Sprint-Nextel are FCC licensed telecommunications providers authorized and mandated to provide wireless communications services to the Loudoun County area. Fibertower is a wireless backhaul provider currently doing a network design in Loudoun County. MSV is currently designing a network for the Washington DC market in preparation for offering a new wireless service. The Applicant is proposing the construction of two new 100-foot monopoles to support service delivery in an area of verifiable lack of coverage near the intersection of Charles Town Pike (Rt. 9) and Berlin Turnpike (Rt.287) in the Wheatland area.

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant’s recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

In general, it is the opinion of this consultant that this application should only allow one (1) 100- foot Monopole tower to be constructed with new setback requirements, and should be considered for approval contingent upon the criteria noted in Section 3.0 “Recommendations” of this document.

*George N. Condyles IV*

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George N. Condyles, IV CPM  
President and COO  
Atlantic Technology Consultants, Inc.

## 1.0 **TECHNICAL:**

### 1.1 **Siting**

The proposed tower site is a 60' x 80' fenced compound on approximately 4,800 square foot portion of a 9.80 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 26 ((46D)) (MCPI # 413-15-7663). The proposed site, located on the south side of Charlestown Pike (Route 9) and the east side of Berlin Turnpike (Route 287), can be accessed off of Charles Town Pike and is physically located at coordinates N 39° 11' 11.50" and W 77° 40' 36.7" at a ground elevation of 484.226'.

The Applicant is proposing to construct two (2) 100-foot monopoles with 4' lightning rods, which can accommodate up to four (4) co-locators on each monopole. The site compound could accommodate approximately 6 shelters or cabinets and could be accessed via a proposed 12' wide gravel access driveway.

#### **Setback:**

The tower complies with the County's current setback requirement that "...towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)] In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 100' monopole setback from the nearest property line approximately 53', which is 53% of the height of the tower.

The nearest occupied dwelling to the monopole is approximately 400', which is a 400% setback.

**However, ATC recommends more stringent requirements for all communications tower setbacks within the County.**

ATC recognizes that Section 5-618 (B) (1) (b) of the Loudoun County 1993 Zoning Ordinance states the following:

Section 5-618 (B) (1) "**Monopoles, Permitted by Right.** Monopoles shall be permitted by right subject to the performance criteria listed in Section 5-618(B)(3), in the following situations:

Section 5-618(B)(1)(b) "In the PD-OP, GB, PD-GI, PD-SA, PD-IP, PD-RDP, OR MR-HI zoning districts provided it is located 750 feet or greater from an adjoining residential district."

**It is the opinion of ATC that setbacks for all towers in every district should be as follows:**

1. The setback from the centerline of the tower to the nearest property line shall be 110% of the height of the tower.
2. The setback from the centerline of the tower to the nearest residence or occupied dwelling whether it is on the subject property or adjacent to subject property shall be a minimum of 750 feet.

Therefore, ATC recommends that the proposed tower site be moved further away from the property lines closer to the center of the property to meet the above-mentioned ATC recommendations as follows:

1. The centerline of the proposed 100-foot monopole should be located a minimum of 110-feet from the nearest property line, which means moving the proposed monopole at least an additional 57-feet to the west of its current location;
2. The centerline of the proposed 100-foot monopole should be located a minimum of 750-feet from the nearest residence, which means moving the proposed monopole at least an additional 350-feet to the north of its current location.

#### **Geotechnical:**

No special requirements.

#### **Landscape Buffer:**

The existing on-site vegetation will provide limited screening. There are mature 40'-50' white pine on the southern property line directly behind the proposed compound that was planted by the adjoining property owners, Holland R. and Yvonne M. Burgan. Most recently, a 6-foot high wooden stockade fence has been installed by Hyun and Young Hee Kim along this southern property line. Across the street on the north side of Charles Town Pike (Route 9) is the Loudoun Valley Vineyards.

The County is recommending an additional buffer "...to soften views and minimize the potential visual impact of the proposed telecommunications facility on the surrounding area."

Under Loudoun County's September 17, 2007 "Conditions of Approval" item condition number 6 indicates:

"In order to provide additional screening and limit the visual impact of the telecommunication facility, the Applicant shall plant a minimum of thirty (30) evergreen trees around the perimeter of the compound. The thirty (30) evergreen trees shall maintain a distance of ten-feet

(10') from the fence line enclosing the compound. The evergreen trees shall maintain a minimum horizontal spacing of ten-feet (10), and a minimum of ten-feet (10') shall separate the first row from the second row. The thirty (30) evergreen trees shall be installed prior to the issuance of a zoning permit for the telecommunication facility. The Applicant shall commit to maintenance of the thirty (30) evergreen trees."

In addition, it is important to note that the Department of Historic Resources stated in their September 4, 2007 letter, "...we strongly support the Loudoun County Department of Planning's recommendation that the applicant consider the addition of vegetative screening, such as a buffer of evergreen trees at least 20' in height, given the proposed location of the monopoles within an open field."

### **Co-Location:**

While co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area, there are currently no existing structures within a 2-mile radius on which to co-locate that would meet the carrier's coverage objectives.

However, there is an existing 145-foot tower located at 36655 Stony Point Road, Purcellville, owned by Fred and Jann Petrosino. The 145-foot guyed lattice tower is physically located approximately 1 ½ miles from the proposed CWS Wheatland site at N 39° 11' 15.6" and W 77° 44' 6.4" at an elevation of 1090'. This tower has approximately two (2) slots available and would make a good hand-off site for the proposed CWS #106 Wheatland site.

CWS has designed the two (2) monopoles to accommodate up to four (4) co-locations each for a total of eight (8) co-locations. However, ATC is recommending approval for only one (1) monopole.

## **1.2 Structural**

The two (2) proposed 100-foot monopole tower designs shall consist of high strength steel and shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

**Structural drawings of the monopoles signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the towers' ability to structurally accommodate the antennae and associated appurtenances of four (4) co-locations, while complying with all applicable construction and loading standards, guidelines, and codes has NOT been submitted with the Application.**

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

### 1.3 RF Exposure

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure. Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

**A RF Analysis Report has NOT been submitted with the Application. In consideration of this proposal to construct two (2) monopoles in close proximity to one another within the same compound, a certified RF Analysis Report is recommended.**

RF site exposure warning signage placement shall be appropriately planned for this site.

### 1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

**A grounding plan was not submitted with this Application.**

### 1.5 General Safety

The 60'x80' site compound will be surrounded by suitable 7' security fence with 1' of barbed wire to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information and FCC Registration number.

The Permit Plans should include the installation of an OSHA-approved style of fall prevention cable.

## 1.6 Interference

An interference study, taking into account all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design, and therefore it is assumed that such a study has not been performed.

**In consideration of the close proximity of the two (2) monopoles to each other, it is recommended that an interference study be performed using the exact carrier technical information if the application is approved for two towers.**

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

## 2.0 PROCEDURAL

### 2.1 FAA Study

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

"Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided."

### 2.2 FCC Antenna Site Registration

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

### 2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction

of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

**A NEPA Phase I Evaluation dated April 9, 2007 and prepared by Baxter Consultants, Inc. has been submitted with the Application that indicates NO IMPACT. Upon review of correspondence with consulting agencies, this Consultant did not note any references indicating an impact.**

A NEPA Phase I Report should include the following items:

- NEPA Checklist
- NEPA Summary Report
- Associated documentation
  - Figures, Drawings, Maps
  - Tribal Correspondence
  - Land Resources Map and FEMA Floodplain Map
  - SHPO Correspondence (See next Section 2.4 “Historic Impacts)
  - Department of Game and Inland Fisheries Response
  - Department of Conservation and Recreation Response

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

## 2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President’s Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

**A response dated September 4, 2007 from the Virginia Department of Historic Resources (VDHR) was submitted with the Application. VDHR’s response is the following:**

**“...it is our opinion that this project will have no adverse effect upon historic properties, provided that the vegetative buffer recommended by the Loudoun County Department of Planning is installed in order to screen the visual effects of the monopoles.”**



## 2.5 Supporting Documentation

The Applicant did include documentation supporting the construction of the proposed site in the form of propagation mapping. RF coverage maps from Verizon Wireless, Sprint-Nextel, and T-Mobile showing their wireless coverage with and without the proposed CWS site was submitted.

An independent RF analysis has been performed by this consultant, with coverage maps appended to this report, verifying that the applicant will be able to meet their stated coverage objectives to provide the wireless coverage necessary to alleviate the lack of coverage encountered in this area.

Supporting documentation in the form of photo-simulation was submitted with the Application. This Consultant believes the photo-sims are an accurate representation of the monopoles from various locations surrounding the proposed site.

## 2.6 Pending Invisible Towers – Charles Town Pike

Another site being considered for approval in this same area is a 138' monopine being proposed by Invisible Towers to be constructed on a 0.1859 acre lease area. The proposed site would be located approximately on the north side of Charles Town Pike (Rt 9) between Daymont Lane and Old Wheatland Road (Rt 698) at 38696 Charles Town Pike, Waterford, VA.

**The proposed Invisible Towers site is only ½ mile from the proposed CWS #106 Wheatland site.**

## 3.0 RECOMMENDATIONS

This application represents an appreciable intent on the part of the Applicant to conform to all applicable federal, state, and local regulations, accepted industry practices, and specific County ordinances regarding construction of new telecommunications towers. It is therefore the recommendation of this Consultant that the County consider the Applicant's proposal contingent upon the following criteria being submitted for review prior to final approval:

- Adjust siting of proposed tower to meet the new setback requirements.
- Structural Drawings;
- Grounding specifications;

- A certified RF Analysis Report;
- An interference study.

**In addition, it is the opinion of this Consultant that only one 100' monopole should be considered for approval for this Application and the monopole should be moved a minimum of 57-feet to the west and 350-feet to the north to meet ATC's setback recommendations for nearest property line and nearest residence or occupied dwelling.**

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,

*George N. Condyles IV*

George N. Condyles, IV  
President & COO



**Site Entrance off of Route 9**



**Approximate Location of Proposed Tower**





**View of Rt. 9 and Rt. 287 Intersection**



**Recently erected fence by Property owner of Proposed Site  
Evergreen Pine Trees approximately 40' AGL.**





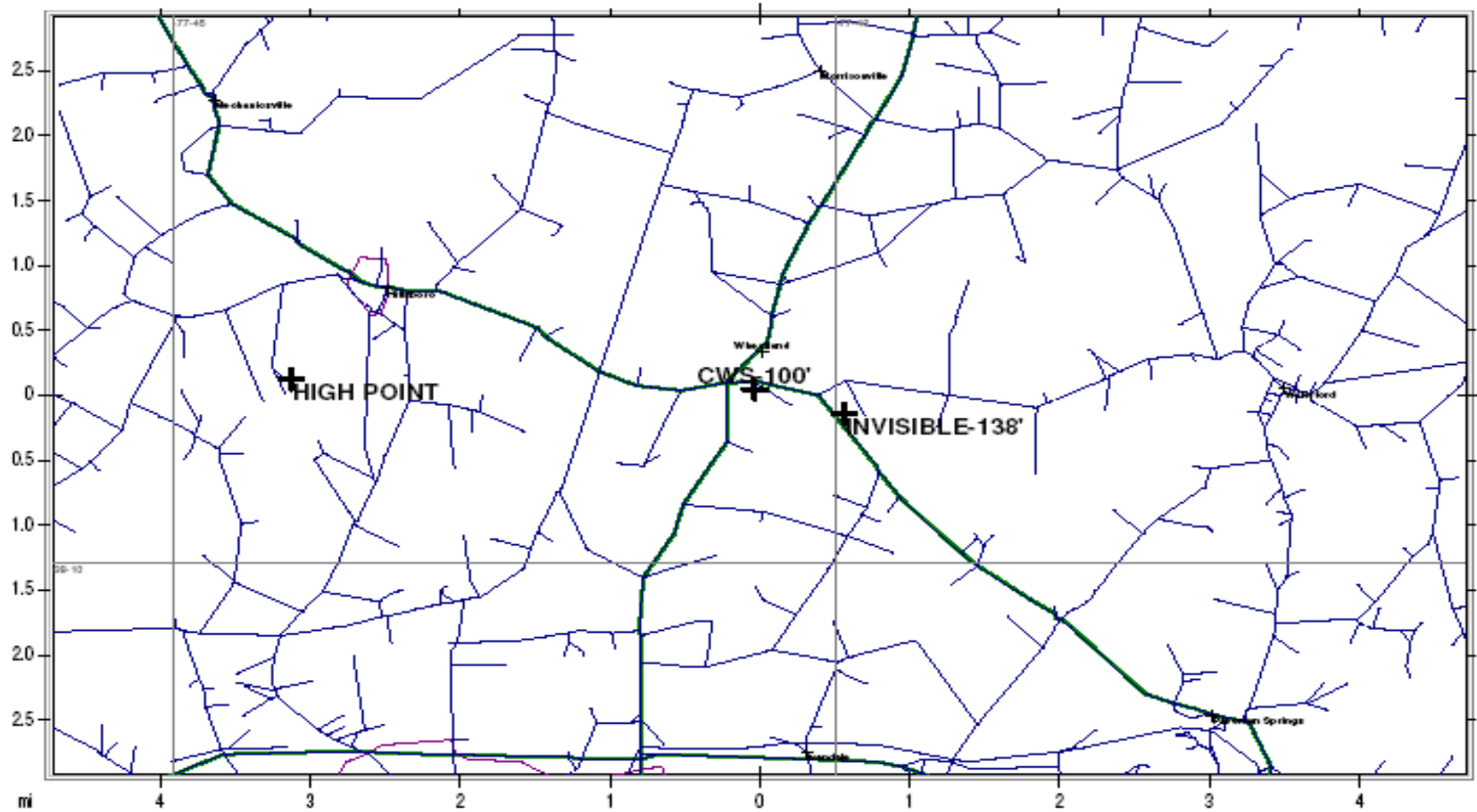
**View from East Property line of cleared property.**



**Property Line of Adjacent Property – Agricultural**  
**Tower location setback issue**

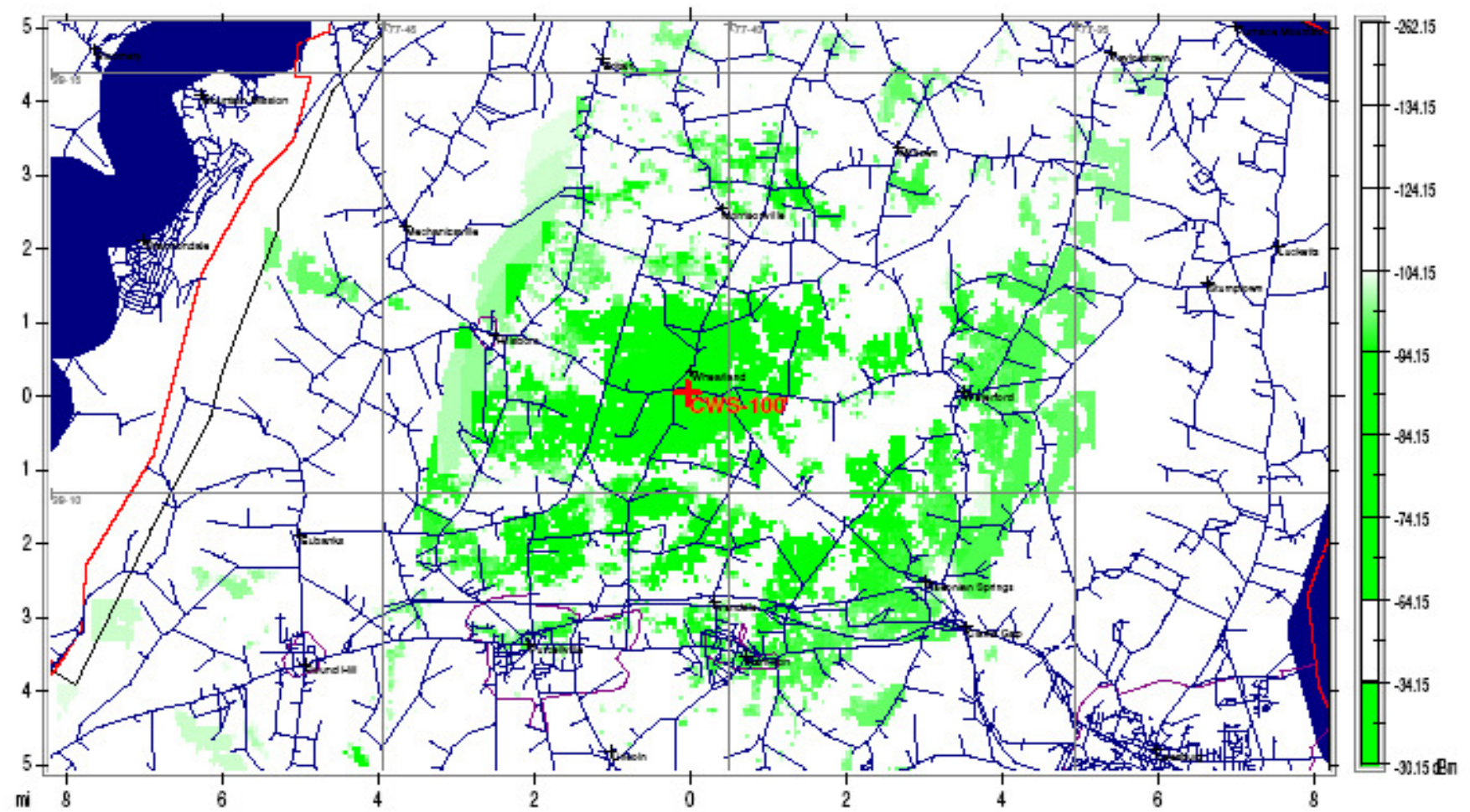


# WHEATLAND, LOUDOUN COUNTY, VIRGINIA



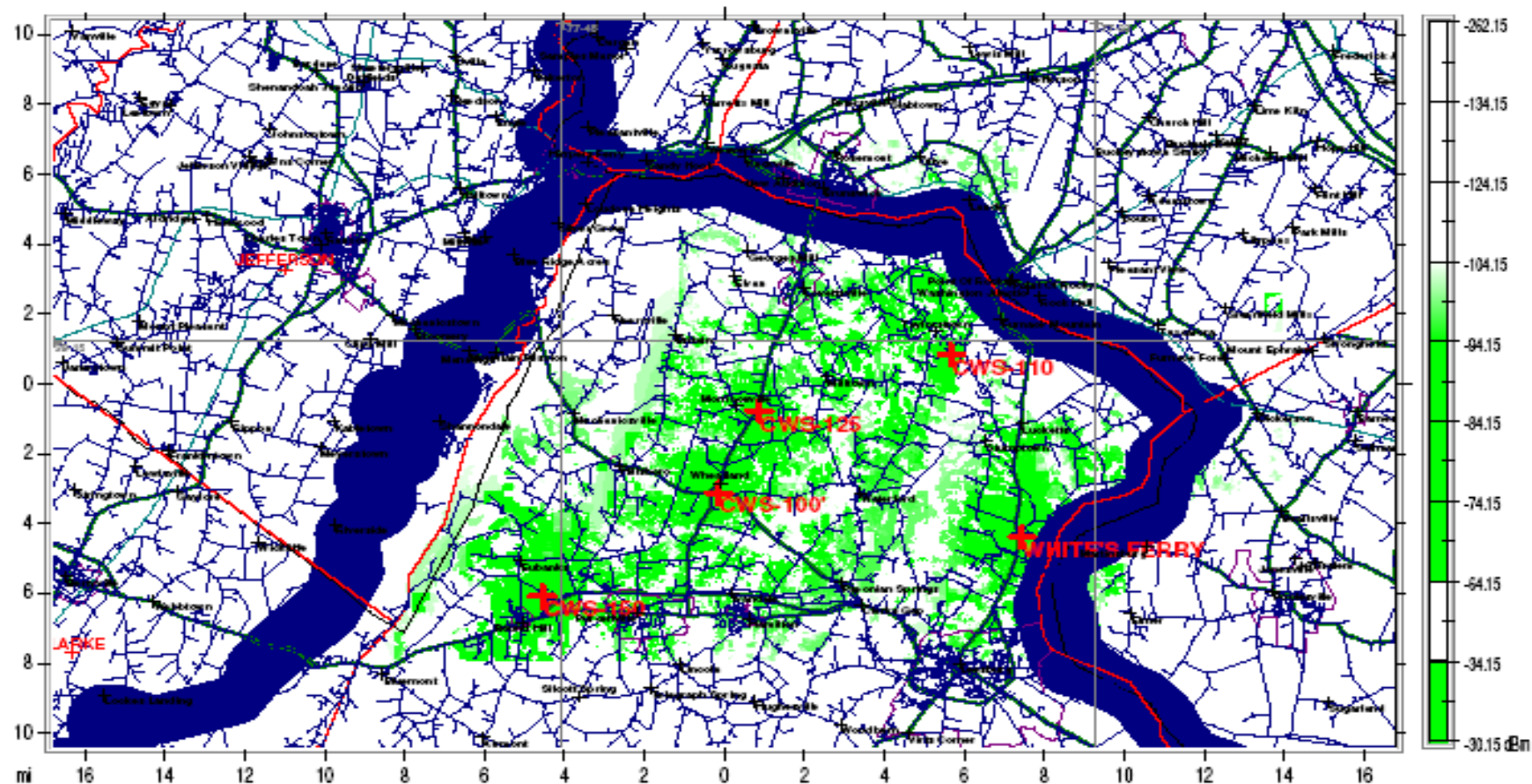
HIGH POINT & CWS OR INVISIBLE TOWER

# WHEATLAND, LOUDON COUNTY, VIRGINIA



CWS-100 AGL

# LOVETTSVILLE, LOUDON COUNTY, VIRGINIA



ALL CWS SITES-WHEATLAND-ARLINGTON CORNER, TAYLORSTOWN, WHITE'S FERRY, ROUND HILL





## Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > TOWAIR[FCC Site Map](#)

### TOWAIR Determination Results

[? HELP](#)[New Search](#) [Printable Page](#)

#### \*\*\* NOTICE \*\*\*

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

#### DETERMINATION Results

**Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.**

#### Your Specifications

##### NAD83 Coordinates

Latitude	39-11-11.5 north
Longitude	077-40-36.7 west

##### Measurements (Meters)

Overall Structure Height (AGL)	31.7
Support Structure Height (AGL)	30.5
Site Elevation (AMSL)	147.6

##### Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

#### Tower Construction Notification

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Note: Notification does NOT replace [Section 106 Consultation](#).

<b>ASR Help</b>	<a href="#">ASR License Glossary</a> - <a href="#">FAQ</a> - <a href="#">Online Help</a> - <a href="#">Documentation</a> - <a href="#">Technical Support</a>
<b>ASR Online Systems</b>	<a href="#">TOWAIR</a> - <a href="#">CORES</a> - <a href="#">ASR Online Filing</a> - <a href="#">Application Search</a> - <a href="#">Registration Search</a>
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